Examining the Effectiveness in Implementing Everyday Math

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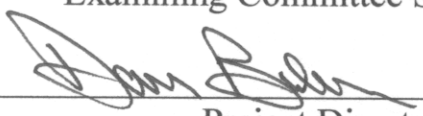

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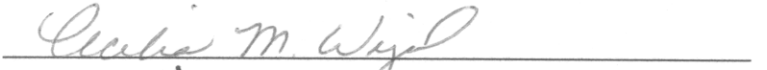

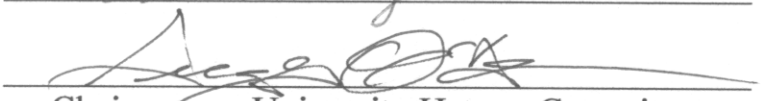

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Section I

Abstract

In the 1999-2000 school year, Hamilton County adopted the Everyday Mathematics program as the new math curriculum for the district. Compared to the previous curriculum, this program introduced a radically new approach to teaching math to K-6 students. The premise of this study was to identify teachers who are outstanding in their implementation of the Everyday Mathematics and the factors that affect this implementation. Parental Involvement, along with other factors that were recommended during interviews with school administrators, was originally hypothesized to be a very important factor for the students' success in the Everyday Mathematics. Based on this assumption, this study proceeded by looking at the impact of these factors on both the students' and the teachers' success with this program. Surveys, which consisted of the factors recommended by the administrators, were distributed to the outstanding teachers as well as those teachers who were not recommended but had three or more years teaching experience in Hamilton County. The teachers were asked to rank and rate these factors according to their importance in the implementation of Everyday Math in their classrooms. These surveys showed that there was no statistically significant difference in the way that both groups of teachers rated and ranked the factors according to their importance for the successful implementation of the Everyday Mathematics. Yet, the surveys did show that neither group of teachers felt that parental involvement was a very important factor for the successful implementation of the Everyday

Mathematics. Instead, they identified some of the other factors such as *personal commitment to the program* and *willingness to take risks* as having a greater bearing on the success of the Everyday Mathematics program in their classes.

Section II

Rationale

My initial interest began when I discussed Everyday Mathematics (Everyday Math) with Dr. Gavin Townsend who was quite surprised that his child who was in elementary school was doing algebra under the new math program of Hamilton County. From that point, regular conversations with some parents led me to see that quite a few of them were unclear about the processes of the Everyday Math program. Therefore, many parents did not know how to adequately help their children. I have always been concerned about the importance of parental involvement in overall student success and, therefore, I wanted to see how the lack of information about Everyday Math affected the students. Then, I planned to produce a parenting guide for the everyday math program to better help parents to help their children, thus improving the overall achievement of the students.

In pursuing my interest in parent involvement, I read literature from the Education Trust that indicated that parental involvement in poverty schools was essential component in Student success. One of the main focuses of the Education Trust was to have poverty schools "focus their efforts to involve parent on helping students meet standards" (Jerald, 1999). A Stanford University article on the importance of parental involvement reports that "family participation has a greater affect on student success than any other variable, including socioeconomic status or parents' education" (Wagner, 1998). From these articles, I began to believe that parental involvement would be a critical factor for in the success for the Everyday

Math.

As I began to interview administrators to determine the factors that most affected the successful implementation of the Everyday Math Program in the school resulting in higher student achievement scores, although parental involvement was a possible factor, they indicated that it was not a determining factor as I had suspected. The criteria/ factors that the administrators suggested were the following: availability of manipulatives, administration and staff modeling lessons for Everyday Math, school staff development, support of administration, county staff development and summer training programs, parent involvement, personal time for planning and reflection on the program at school, willingness to experiment with new approaches and take risks as a professional, teachers' perception of student success, the teacher's understanding of the program, and their personal commitment to the program.

My previous investigation has directed my curiosity to find out about why the Everyday Math Program works when it does work and which factors promote this success. These factors could possibly include parental understanding of the program. Yet, they may show that the program is still successful even when the parents are not involved.

Section III

Everyday Math: *History and Foundation*

When the University of Chicago School Mathematics Program (UCSMP) was founded in 1983, the need for intervention in the mathematics programs of our nation's schools was quickly brought to their attention. The students of the US were being under-served and compared poorly with their Asian and European counterparts. Many students were completing their education with insufficient mathematical knowledge and skill to perform in the work force of America. The Everyday Math authors, developers and other mathematicians and educators did studies to find the best approach for educating students with different learning styles on various levels. The results of this study "demonstrated that most children enter school with far greater mathematical knowledge and intuition than either teachers or textbooks expect them to have" (Becks, 2000). They further found that in terms of a mathematics curriculum, children need a curriculum that: 1) is interesting and practical, 2) looks at the full band of mathematics, not just one specific area, and 3) focuses on basic skills in relation to abstract thinking and understanding. Everyday Math was then developed, one day at a time, after the UCSMP modified various curricula from multiple Asian and European schools to correspond with their research. Everyday Math is now a fully certified K-6 curriculum that distinguishes itself from all other math curricula through its special approaches to students' learning.

The Everyday Math Program engages the students in fundamental arithmetic skills while they explore four different domains of math: "number sense; algebra and

functions; measurement and geometry; and statistics, data analysis, and probability" (Becks, 2000). *Number Sense* involves the students in many math concepts that allow them to solve problems of daily life. As the students engage in various operations including geometry, measurement, algebra, and the like, they are taught to not only focus on the correct answer, but to also examine and evaluate their procedure in getting to that answer. Everyday Math emphasizes that there may be a number of ways to get to one solution; thus allowing students flexibility in their approaches to learning. *Algebra and Functions* regards algebra as a compilation of interpretations: "generalized arithmetic, a problem-solving procedure, a study of quantitative relationships, and the structure of mathematics (Becks, 2000). *Measurement and Geometry* allows student to both approximate and deal with errors on the basis that all measurements are estimates. *Statistics, Data Analysis, and Probability* involves the students with real-life problems as they gather and analyze data. Everyday Math integrates all four of these areas to give the student an engaging and eclectic experience with mathematics.

Everyday Mathematics' Distinguished Approach to Learning

The Everyday Math Program utilizes the scaffold approach to learning based upon the belief that "students must be exposed to concepts and skills many times and in many different ways before they can master them" (Becks, 2000). In terms of mathematics, the scaffold approach to learning is that "mathematics skills and concepts are taught over time using an array of instructional strategies and a wide variety of applications" (Becks, 2000). This approach distinguishes the Everyday

Math Program from other math curricula which are often static and text-book dependent. The Everyday Math program introduces the student to consistent hands-on activity for determining the answers and processes of learning for many problems. New content materials are introduced in connection with prior knowledge to build upon that knowledge by engaging the students in further explorations, projects and manipulatives.

Lessons for the Everyday Math generally begin with a *Math Message* which serves as a brief introduction to the core of the day's lesson. The instructor then has the *Instruction and Discussion* framework already given as a map for leading the students in discussion about the material. Everyday Math proceeds by passing responsibility for learning first to the teacher through the *Teacher-Directed Activities.* Students are soon encouraged to take responsibility for their own learning through the *Independent Activities* which mainly allow students to strengthen their mathematical skills. The Everyday Math program also includes the *Minute Math, 5-Minute Math* and *Math Boxes* as supplementary tools for the classroom. Many instructors use *5-Minute Math* to begin or end their day with the students by presenting the problems on an overhead. This allows student to quickly process and refresh their minds independently on skills learned in past lessons and grade levels.

Everyday Math presents a balanced approach to assessment that consists of regular informal observations, short responses, and student interviews and conference. These are designed to counteract the dated approach of periodic testing of an isolated skill through formal tests, long responses and written assignments. The assessment tools of Everyday Math include: *Ongoing assessment suggestions in daily*

lessons, Mid-unit reviews, End-of-unit reviews, Math logs, Class progress indicators, Individual and class progress charts, Class checklists, and *Individual Profiles of Progress checklists* (Becks, 2000). Everyday Math also provides for teachers to modify their lessons for students with special needs through a variety of ways and different approaches to learning as well as materials and manipulatives available to both the student and teacher.

Everyday Mathematics: Success Stories

After some experience with Everyday Math, many schools and school districts have reported significant changes in the students' scores as a result of this program. The Northshore School District of Washington reports that the number of fourth grade students who meet or exceed mathematics standards has increased by 30 percent over the four years after their adoption of the Everyday Math program in 1996-1997. Fennel Elementary School in South Carolina also reported that 94% of fourth graders also met or exceeded the basic level in 2001 as opposed to the 49% in 1999. Widmeyer Communications reports that in New York, NY, "that 10 schools using SRA/McGraw-Hill's Everyday Mathematics have raised the performance of their diverse student bodies" (Wolfgang, 2003). More and more the Everyday Mathematics Program is being found as an instrumental tool for increasing students' performance and understanding of mathematics.

Everyday Mathematics: The roles of the community for educating the students

Everyday Math holds to the belief that: "every stakeholder in a district – every student, teacher, administrator, *and parent* – needs to be dedicated and involved" (Becks, 2000). The authors of this program clearly designed it with each stakeholder in mind as parts of a puzzle who come together to make a successful whole – the student's learning experience. The entire program is focused on the students' success in mathematics not only as a single subject but also as an interdisciplinary matter that correlates with other subjects and many real life situations. Teachers were consulted in the design of this program every step of the way. The two factors identified by Everyday Math for "ensuring quality teaching" are "support for teachers in choosing and implementing appropriate instructional strategies and knowledge of the content that is to be taught" (Becks, 2000). Each level of Everyday Math has a *Teacher's Manual & Lesson Guide* that gives numerous ideas, facts and information for instructional support and strategies for individuals, whole group and small group instruction. The Everyday Math Corporation also provides various professional development opportunities for educators such as: "The National Users' Conferences, Local district professional development options which may include training of mentor teachers and Training videos that provide content information as teaching demonstrations by experienced Everyday Mathematics teachers" (Becks, 2000). After considering the administrators' roles, Everyday Math developers found successful and experienced administrators provide strong leadership, in-service

support, and consistent accountability and monitoring of progress to their staff to deliver a "quality educational product to their districts children" (Becks, 2000). Due to the Everyday Math belief that "parental involvement in the education of their children is a determining factor in children's success in school", the program provides many tools and ideas for aiding teachers and administrators in effectively working with and involving parents (Becks, 2002). The program provides a Parent Letter for the beginning of each unit and the beginning of the year. Home links are given as daily homework assignments to inform the parents of their student's progress. A video, *Everyday Mathematics: An Overview for Parents*, is provided to introduce the Everyday Math curriculum. The book, *Creating Home & School Partnerships*, also accompanies each Everyday Math kit and gives many ideas for the teacher to involve parents and the community in learning math. Everyday Math presents a curriculum meant to engage the students not only with a variety of methods and styles of learning, but also for surrounding the students with the support they need from their home and school community to help facilitate academic success.

Section IV

Hamilton County's Adoption of Everyday Math/ Professional Development

During the 1998-1999 school year the Hamilton County Department of Education faced the task of choosing a math curriculum for the school district. A textbook committee for the adoption of the new curriculum was convened to choose the program which would best suit the needs of the Hamilton County student population. The committee was comprised of teachers from both urban and suburban school settings to take into consideration the diversity and the different needs of the students. Several publishers came before the committee to present their different curricula while other publishers selected a school within a zone for the teachers from various places to view and discuss the different math curricula.

The committee was attracted to the spiraling curriculum of the Everyday Math Program. "It looks more to conceptual understanding and the skills are looped" (Roddy, 2002). There may be a lesson at one point of the curriculum that is seen and connected to another part. The fact that Everyday Mathematics is a standards based curriculum, based upon the National Committee of Teachers in Mathematics' standards, was quite appealing to the committee. Another difference in the Everyday Math approach to learning and "the old way" is that this introduces students to working in cooperative groups to solve math. The students are "able to justify their thinking and reasoning" versus the teacher "teaching steps and procedures and the students regurgitating those steps" (Roddy, 2002). "Looking for multiple solutions is

a key to this approach, as well as working with others" (Roddy, 2002). After taking all of this into consideration, getting input from other teachers and looking at the various studies on Everyday Math, Hamilton County adopted the Everyday Mathematics Program during in 1999.

The administration knew that in order for successful implementation of this program during the 1999-2000 school years, the administrators and teachers would need much teaching and training about the new program. As a result, that summer the Hamilton County Department of Education (HCDE) ran sessions to provide the teachers with intense training in Everyday Math. These training sessions, which lasted approximately six hours, consisted of hands on exercises and modeled lessons for the teachers to engage in. The county also hosted many system days designated for professional development specifically in Everyday Math. This training, along with the ongoing new teacher training in Hamilton County, started in the summer and continues throughout the school year. Occasionally, the county offered after school sessions for teachers on a need basis for this and other programs. Hamilton County also hired consulting teachers who go to the schools and help teachers in instructional practices. Of the 39 consulting teachers in Hamilton County, 16 were former math and science specialty teachers who excelled in those subject areas. Every Benwood school has a permanent consulting teacher who aids the teachers through modeling lessons, giving feedback through observations and conference.

The main goal of the Hamilton County Department of Education was to "increase the number of students doing well in math; where it is not an elite thing but

all students can do well in math" (Roddy, 2002). This goal also pertained to the Benwood schools.

Section V

Benwood Schools: What they are?

The Benwood Foundation for Chattanooga initiated the Benwood program for the nine urban low performing schools in 2001. The Benwood Foundation gave a $5 million grant to the Public Education Foundation (PEF) which responded by matching the grant with $2.5 million dollars for facilitating "dramatic improvement of student achievement in Hamilton County's urban elementary schools" (PEF, 2003). These funds are designated to achieve two purposes: "improving literacy and attracting high-quality teachers" (PEF, 2003). The PEF then acts as an overseer in guiding the Benwood schools to achieving these goals. The "high-priority" elementary schools are Hardy, Calvin Donaldson, Clifton Hills, East Lake, East Side, Hillcrest, Howard, Orchard Knob, and Woodmore. Since the primary focus of this program is literacy, the goal is to have 100 percent of the students who began this program in kindergarten reading at or above grade level by the third grade. The individual schools are encouraged to bring their own researched-based practices and utilize various strategies that will help in achieving this goal. Some school strategies may include a school-family coordinator, extra tutoring for students, mentoring for new teachers, and additional professional development opportunities.

Another initiative of this program is to hire, train and retain high quality teachers for the Benwood schools. The Osborne Foundation provides tuition for a Masters Program for selected teachers working in the Benwood schools. Other incentives are also available to build teams of quality teachers in the schools. In the

past, urban schools have faced shortages of qualified, experienced teachers. This program hopes to change both the quality of teachers and the students' literacy and educational experience.

This entire program is based upon the premise that "family income does not determine student output, that demographics do not determine destiny. And they prove that when communities set clear and measurable goals, invest in the teachers, support the leaders, and involve the parents, all children can achieve" (PEF, 2003).

One year after the initiation of the Benwood Foundation Program, studies show that there were significant improvements in the Tennessee Comprehensive Assessment Program scores along with many other scores. In July of 2002, The Chattanooga Times Free Press noted that "the Benwood schools showed an average gain of four points in reading for grades two through five, compared to the district-wide gain of 1.91 for the same group, PEF figures showed. Similar gains were reported for language, with a five-point gain as compared to the system's three-point gain, and math, where Benwood pupils averaged a 4.91-point gain compared to the system-wide gain of three points" (Carroll, 2002).

In these Benwood schools the adoption and implementation of the Everyday Math program has yielded higher test scores.

Section VI

Administration and Faculty response to the program

After the implementation of the Everyday Math in Hamilton County, many administrators found that this "new" approach to math created some controversy among their faculty. Mr. Joynes, principal at Clifton Hills Elementary, said that "People were apprehensive because of the change." He found that as an administrator, he had to make sure that there was the correct amount of training for his staff to make them comfortable with the program. He had to remind the faculty that this program was not an option. One of the greatest fears among his staff was the fact the Everyday Math has gaps because of the different style of implementation (spiraling curriculum). They found that the parents were initially frustrated with the program because they did not understand its approach to mathematics. Therefore, Mr. Joynes and his faculty instituted Everyday Math nights where at times they used the Creative Discovery Museum to hold sessions where parents and children rotate and learn about the program and its manipulatives. Other math nights involved time for parents to visit their children's classroom to participate in activities with their children and the teacher. After years of implementing programs and staff development like this, Mr. Joynes has seen significant changes in the students' math scores as well as in the teacher's commitment to the program.

At Donaldson Elementary, Mrs. Randolph reported although she came to the school as principal a year after the program was introduced, she still found that it was quite a challenge to the teachers. Her main objective was to provide ample staff

development for the new skills needed for this new program. She made the system wide staff development meetings mandatory for her staff. As time progressed she found that some of the teachers were still dealing with the previous math curriculum instead of the Everyday Math, but she slowly began to pull that material from their rooms. Mrs. Randolph and her consulting teacher both model lessons for the teachers for them to see different approaches for teaching the Everyday Math. The modeled lessons are followed up by a conference where the teacher discusses what he/ she saw and how it could be implemented into his/ her teaching approach. Then Mrs. Randolph or her consulting teacher return a week later to observe the teacher implementing those things she identified in their conference. Mrs. Randolph has found this to be a great way to help her staff. A concern that her administration has faced is getting the teachers to understand the concept that the games reinforce the skills taught in the lessons. The Donaldson staff has also found that are some problems with the upper grade students because they had so many foundational gaps; "they did not have the basics that they actually needed" (Randolph, 2002). Mrs. Randolph says that "it is an excellent program that moves through application and problem solving", but she would like to see them implement more writing to have students explain the process of finding the answer. Nevertheless, she has found that her math scores have risen significantly, about 8-10%. She also promotes parent involvement by having family math nights and parent-teacher quarterly meetings where teachers introduce the math skills to be covered in the upcoming nine weeks. This keeps the parents abreast of the activities of the classroom and shows them how they can help their students be successful.

Hillcrest Elementary principal, Mrs. Everette, says that although she has found that the Everyday Math does not have enough emphasis on computation, the program is proving to be successful over time. She and her consulting teacher also model lessons and provide extra staff development with the grade levels. Since all the manipulatives for the program are not provided by the school system, she believes that the support of the administration is integral to the success of the Everyday Math.

In regards to the Everyday Mathematics program, Eastside Elementary principal Mrs. Baker remarks that "it has been very positively accepted here". "The veterans are the ones who doubted it the most. Yet once the teachers used it for a while and saw the positive student response - that made the difference." The school also hosts a family night for math about three times a year. She has found that the very strong math teachers at all grades help to support their colleagues. This, too, has helped the success of the program at Eastside Elementary.

Mrs. Carlson, the principal at Big Ridge Elementary, says she faced a great deal of resistance to the Everyday Math program. Since her school is not a Benwood school, her staff does not qualify for the incentives for raising test scores. She says that "it is important to give teacher staff development and insist they attend these meetings." She, too, was a principal who required her staff to attend the training and staff development for the Everyday Mathematics. Immediately upon implementing the Everyday Mathematics they were faced with some problems. Some problems were that the program was time consuming and getting the materials also required time and resources. Some items outside of the kit requirements were needed so she also provided them for her staff. Although she found many on her staff complaining,

they were motivated to utilize the program. The greatest motivator after the third year was the math test scores, especially in fifth grade, since those students had experienced the program for three years. After the adoption of the Everyday Math, Mrs. Carlson did not make her staff throw away the previous curriculum; instead they were allowed to use it for supplementing and reinforcing the Everyday Math. The greatest concern among her staff is that there is not enough emphasis on reinforcement, review and memory. She has found that those teachers who are successful in Everyday Math are the ones who share what they know with others, attend staff development that is not required, and also do creative things for their classroom to encourage the students. These teachers seek to grow professionally and are willing to experiment and take risks as a professional.

In July 2002, The Chattanooga Times Free Press reported that "Hamilton County schools that received extra funds from the Benwood Foundation recorded higher gains on recent test scores than the rest of the school district" (Carroll, 2003). The importance of having additional resources can be seen in the results on the Tennessee Comprehensive Assessment Program (TCAP) tests. Mr. Joynes even attributed the turnaround in test scores at Clifton Hills to the extra resources from the Benwood foundation. Although the school's math scores are still below national norm, they moved nine points from the 32nd percentile in 2001 to the 41st in 2002 (Carroll. 2003). Coupling the Everyday Math Program with the resources from the Benwood Foundation appears to be a path to successful student achievement.

Section VII

Teacher Questionnaire Research

To begin my research about factors that support successful implementation of Everyday Math I interviewed the five principals. Each principal recommended that I submit a survey to two teachers who are considered as high performing with respect to Everyday Math based upon student achievement using the TVAAS or the NCE scores. The recommended teachers' students generally yield a score of 115 or above on the TVAAS. The Tennessee Value Added Assessment System adjusts scores to examine students' gains each year in regards to a standard set for each grade level. The average year's growth is depicted by a score of 100. Benwood teachers qualify for a bonus if their students' test scores are 115 or above. Since Big Ridge test scores were already high, gain scores really do no justice in showing the overall student achievement. Therefore, Carlson recommended her teachers on basis of their NCE (Normal Curve Equivalent) scores. "NCE scores range from 1-99. They are similar to the national percentile scores but are based on an equal-interval scale. The difference between two NCE scores has the same meaning across the entire scale. NCE scores on different tests can be directly compared and NCE scores can be averaged for comparison across groups. The mean of the NCE scale is 50 with a standard deviation of 21" (Hernandez, 2003).

The factors identified for the questionnaire were derived from interviews with the principals and were confirmed as important by all.

After forming the questionnaires, I went to the principals and asked them to

distribute the survey to the two teachers they recommended and to approximately eight teachers in their school who had taught in Hamilton County for three or more years (see Figure 1). This gave me ten recommended teachers and thirty-two teachers who had taught three or more years in Hamilton County but did not meet the "outstanding" criteria. The principals were asked to keep the recommended teachers' surveys separate from the other surveys. The questionnaire then asked the teachers to do two things with the factors: rate them according to their importance on a 1-5 scale and rank them in order of their importance from 1-11.

Once I retrieved the surveys from all principals, I had ten surveys from the recommended teachers and thirty-two surveys from teachers who had taught three or more years. The results were tabulated to get the means and analyze the data. Separate analyses were done for the two categories of teachers – recommended as outstanding and those who taught three or more years in Hamilton County (see Figures 2-4). When the means for both the ratings and the rankings from both categories of teachers were complete, I ranked the factors according to their means from the least to the greatest (see below Figures 5 and 6). A Mann – Whitney U test was used to find if there was statistical significance between the different ratings and rankings lists of the two categories of teachers. The test was conducted upon the means of the ratings and the means of the rankings of the individual factors.

Section VIII

Summative Analysis

The Mann –Whitney U test is a nonparametric rank sum test used to "test the null hypothesis that the two population distribution functions corresponding to the two random samples are identical against the alternative hypothesis that they differ by location" (BBN Corporation, 1997). (Statistical work was done with Dr. Miller who ran this test which yielded results that were quite surprising.)

The overall rankings and ratings showed that there is no overall statically significant difference between the two teacher categories based on the Mann-Whitney U tests (see Figure 7). Figures 5 and 6, illustrate that the differences in the means per factor are very small.

To further investigate any significant difference between the two teacher categories and their ratings and rankings, Independent t-tests were conducted upon all recommended and 3 year teachers' ranking and ratings of the items, some 22 comparisons in all (11 factors for rating and 11 factors for ranking). At a .05 level of significance, only one rating was found to show significant difference between the two categories of teachers -- ***Willingness to take risks (factor V8)***, at $t(9.39) = 2.32$, $p=.04$. This significance of factor V8 (see figure 8) is from the ratings of the teachers and can also be identified in figure 6. Levine's Test for Equality of Variances was also run since equal population variances could not be assumed. This test resulted in $p=.04$ indicating that the population variances cannot be assumed equal. Thus, the t-test results are not reliable. However, further in-depth study investigating this

specific factor may produce more conclusive results.

Given the fact that the rankings and the ratings showed no statistical significant difference, it is interesting to observe which specific factors appear to be most important and least important to both groups. For example, in the ratings, both groups ranked the *Availability of Manipulatives, Your personal commitment to the program, Your understanding of the program, Your perception of student success,* and *Willingness to experiment with new approaches* as very important factors for the successful implementation of Everyday Mathematics in their classroom. Both categories of teachers also rated *Support of Administration, School Staff development* and *County Staff Development* as less important factors. The factors with the lowest ratings among both categories of teachers were *Administration and staff modeling lesson* and *Parental Involvement.* In the rankings, *County Staff Development, Parental Involvement, Administration and staff modeling lessons, Support of Administration,* and *Your perception of student success* all received rankings indicating that they were the least important factors for the teachers' successful implementation of the Everyday Mathematics. The factors that were ranked as very important are *Personal time for planning and reflection, Availability of Manipulatives, Your personal commitment to the program and Your understanding of the program.*

Neither group indicated through rankings or ratings that parent involvement was a particularly important factor. Since this factor initially created my interest in this project and because I did not anticipate its lack of importance, it is appropriate to speculate why this occurred. Most teachers may have interpreted parent involvement

as specific help with math instruction and therefore felt that the other factors were more important. Traditionally, parent involvement relates to more general support and care for children and attendance in school activities. If teachers interpreted parent involvement as direct help with Everyday Mathematics in contrast to broad interpretations, they probably felt it had little bearing on student success. If parental involvement had not been directly linked to helping kids with Everyday Math, it might had been rated and ranked as more important by the teachers.

Additionally, it appears that both groups felt that factors related directly to teachers such as commitment, understanding and perceptions of students success were more important than factors external to them such as administrative support, parental involvement, or county staff development with few exceptions in both ratings and rankings. This successful implementation of Everyday Math programs is more dependent on teacher characteristics than on factors not directly under teacher control in the classroom.

In many situations, peoples' perception of their contribution to the program's success may have been biased because they often feel that their individual contributions or their involvement made a significant difference. For example, some administrators interviewed in this study felt that the modeled lessons they provided for the teachers were very important to the success of the program. The teachers did not feel the same way, but instead rated their personal commitment to the program and other personal factors as having been most important for the success of the program. This study did not get the feedback from parents and their perception of what makes the program successful and their role in that success. Further study could

examine parents' perception of the importance of their involvement with the success of the program. It would also be interesting to study whether increased parental involvement would contribute to success in implementing Everyday Math programs by comparing scores of teachers with very high degrees of parental involvement to similar teachers with low parental involvement.

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Joynes, Charles (Principal at Clifton Hills Elementary) [personal communication] January 2003

Randolph, Sheryl (Principal at Calvin Donaldson Elementary) [personal communication] December 2002

Roddy, Stacy (Internal Evaluation and Professional Development Coordinator for Hamilton County Department of Education) [personal communication] December 2002

Section X

Appendixes

Note: Figures 3, 4, and 6 show the data from the teachers who have *Taught in Hamilton County for three or more years.* Figures 2 and 5 show the data from the teachers who were *Recommended as Outstanding (but the bottom of figure 2 displays means for both sets of teachers.*

Figure 1 **Everyday Math Questionnaire**

Figure 2 **Questionnaire Results Data Input Sheet 1**

Figure 3 **Questionnaire Results Data Input Sheet 2**

Figure 4 **Questionnaire Results Data Input Sheet 3**

Figure 5 **Ordering of Data Results – Recommended Teachers**

Figure 6 **Ordering of Data Results – Teachers who have taught in Hamilton County for three or more years**

Figure 7 **Mann-Whitney U Test for both categories of teachers**

Figure 8 **T-tests for both categories of teachers**

Figure 1

Everyday Mathematics Response Questionnaire

As part of my Honors thesis and in cooperation with several principals, I am examining factors that influence effective teaching of Everyday Math in elementary schools. I have collaborated with administrators to identify criteria they felt were important to the success of this program.

Please complete the following survey and return to your administrator. If you do chose to participate in the study, your participation will be completely anonymous. Neither anyone reading the results of the survey nor I will be able to identify you. Please do not put your name or any identifying marks on the survey form.

Using a scale from 1-5, rate each of the following factors according to their significance in the implementation and success of the Everyday Math Program in your classroom. A 1 indicates little or no significance. A 5 indicates that the variable was extremely significant. Also, in the blanks on the far right rank the 11 factors in order of their significance for you with a 1 being most significant and 11 being least.

1 2 3 4 5 Availability of Manipulatives _____

1 2 3 4 5 Administration and staff modeling lessons for Everyday Math _____

1 2 3 4 5 School Staff development – Support of colleagues as well as time to collaborate your with colleagues. _____

1 2 3 4 5 Support of Administration _____

1 2 3 4 5 County Staff development and summer training programs _____

1 2 3 4 5 Parent involvement _____

1 2 3 4 5 Personal time for planning and reflection on the program at school _____

1 2 3 4 5 Willingness to experiment with new approaches and take risks as a professional _____

1 2 3 4 5 Your perception of student success _____

1 2 3 4 5 Your understanding of the program _____

1 2 3 4 5 Your personal commitment to the program – making it successful _____

Please list any other comments you may have.

_____

_____

If you felt parent involvement was a significant factor, please add comments regarding how it could be made more effective. _____

_____

Figure 2
Questionnaire Results Data Input Sheet 1

1:extremely important/ 11:not important											
	Recommended - Outstanding Teachers										
Categories	R - 1	R-2	R-3	R-4	Not Done	R-6	R-7	R-8	R-9	R-10	Means for R- tchrs
Availability of Manipulatives	3	2	1	4		3	6	6	9	5	39/9= 4.333
Administration and staff modeling lessons	10	6	11	10		7	10	10	11	9	84/9= 9.333
School Staff development	4	7	8	9		2	5	9	10	4	58/9= 6.444
Support of Administration	8	4	10	8		6	7	3	3	11	60/9= 6.666
County staff Development	7	10	9	11		4	9	11	4	3	68/9= 7.555
Parent Involvement	11	11	2	5		5	8	4	8	10	64/9= 7.111
Personal time for planning and reflection	1	1	3	6		1	4	8	5	8	37/9= 4.111
Willingnes to experiment with new approaches	2	3	4	2		10	3	2	6	1	33/9= 3.666
Your perception of student success	9	9	7	3		8	11	7	7	6	67/9= 7.444
Your understanding of the program	6	5	5	7		9	2	5	1	7	47/9= 5.222
Your personal commitment to the program	5	8	6	1		11	1	1	2	2	37/9= 4.111

Averages from the 1-5 rating scale / 5:extrememly important 1:not important			
	Recommended Tch	3 or more years exp	
Availability of Manipulatives	46/10= 4.6	146/32= 4.5625	
Administration and staff modeling lessons	35/10= 3.5	96/32= 3.0	
School Staff development	41/10= 4.1	137/32= 4.28125	
Support of Administration	36/9= 4.0	115/31=3.7097	
County staff Development	41/10= 4.1	115/32= 3.59375	
Parent Involvement	28/10= 2.8	95/32= 2.96875	
Personal time for planning and reflection	33/10= 3.3	143/32= 4.46875	
Willingnes to experiment with new approaches	43/10= 4.3	138/32= 4.3125	
Your perception of student success	42/10= 4.2	138/32= 4.3125	
Your understanding of the program	44/10= 4.4	145/32= 4.53125	
Your personal commitment to the program	44/10= 4.4	148/32= 4.625	

Figure 3
Questionnaire Results Data Input Sheet 2

1:extremely important/ 1 1:not important															
Teachers who have taught three or more years in Hamilton County															
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
2		1	1	1	1	2	3	4	1	9	11	6	7	3	3
10		11	11	11	7	4	7	9	9	10	9	11	8	9	9
3		5	2	9	8	3	2	6	2	11	8	5	6	4	4
11		9	10	7	6	8	6	10	5	8	1	8	5	10	11
7		2	9	10	9	11	4	7	3	7	4	4	9	11	10
8		10	8	8	10	10	5	8	10	4	7	7	10	2	2
1		3	3	2	11	5	1	5	6	5	5	3	4	1	1
5		4	7	6	2	9	10	11	11	6	10	9	3	7	7
9		8	5	5	5	4	8	3	7	1	6	10	11	8	8
6		6	4	3	4	6	9	2	4	2	2	2	1	5	5
4		7	6	4	3	1	11	1	8	3	3	1	2	6	6

Figure 4
Questionnaire Results Data Input Sheet 3

1:extremely important/ 11:not important																	
Teachers who have taught three or more years in Hamilton County																	
17	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**Not Done**	**29**	**30**	**31**	**32**	**33**	**Means**
2	10	6	6	5	3	7	2	2	3	4		6	6	1	1	1	120/31= 3.871
5	9	9	9	8	9	10	11	11	10	7		10	9	11	11	11	285/31= 9.193
4	3	5	8	7	1	8	7	5	4	5		9	3	10	10	2	169/31= 5.452
6	11	8	7	9	10	6	8	4	7	3		8	4	9	9	10	234/31= 7.548
1	6	4	11	4	2	11	10	6	8	10		11	10	8	8	3	220/31= 7.097
7	7	11	10	6	11	9	9	10	11	11		7	11	7	7	9	252/31= 8.129
3	8	10	4	3	4	4	1	1	1	1		5	2	5	5	4	117/31= 3.774
9	4	1	5	11	5	1	3	3	2	2		4	5	6	6	5	179/31= 5.774
11	5	7	1	10	7	5	5	8	9	9		3	8	4	4	8	202/31= 6.516
8	1	2	2	1	6	3	6	9	5	8		1	7	2	2	6	130/31= 4.194
10	2	3	3	2	8	2	4	7	6	6		2	1	3	3	7	135/31= 4.355

Figure 5
Ordering of Data Results – Recommended Teachers

Averages from the 1-5 rating scale / 5:extrememly important 1:not important	
Recommended Teachers	
Parent Involvement	28/10= 2.8
Personal time for planning and reflection	33/10= 3.3
Administration and staff modeling lessons	35/10= 3.5
Support of Administration	36/9= 4.0
School Staff development	41/10= 4.1
County staff Development	41/10= 4.1
Your perception of student success	42/10= 4.2
Willingness to experiment with new approaches	43/10= 4.3
Your understanding of the program	44/10= 4.4
Your personal commitment to the program	44/10= 4.4
Availability of Manipulatives	46/10= 4.6

Averages from the ranking of categories from 1-11 1:extremely important/ 11:not important	
Recommended Teachers	
Categories	**Means for R- tchrs**
Willingness to experiment with new approaches	33/9= 3.666
Your personal commitment to the program	37/9= 4.111
Personal time for planning and reflection	37/9= 4.111
Availability of Manipulatives	39/9= 4.333
Your understanding of the program	47/9= 5.222
School Staff development	58/9= 6.444
Support of Administration	60/9= 6.666
Parent Involvement	64/9= 7.111
Your perception of student success	67/9= 7.444
County staff Development	68/9= 7.555
Administration and staff modeling lessons	84/9= 9.333

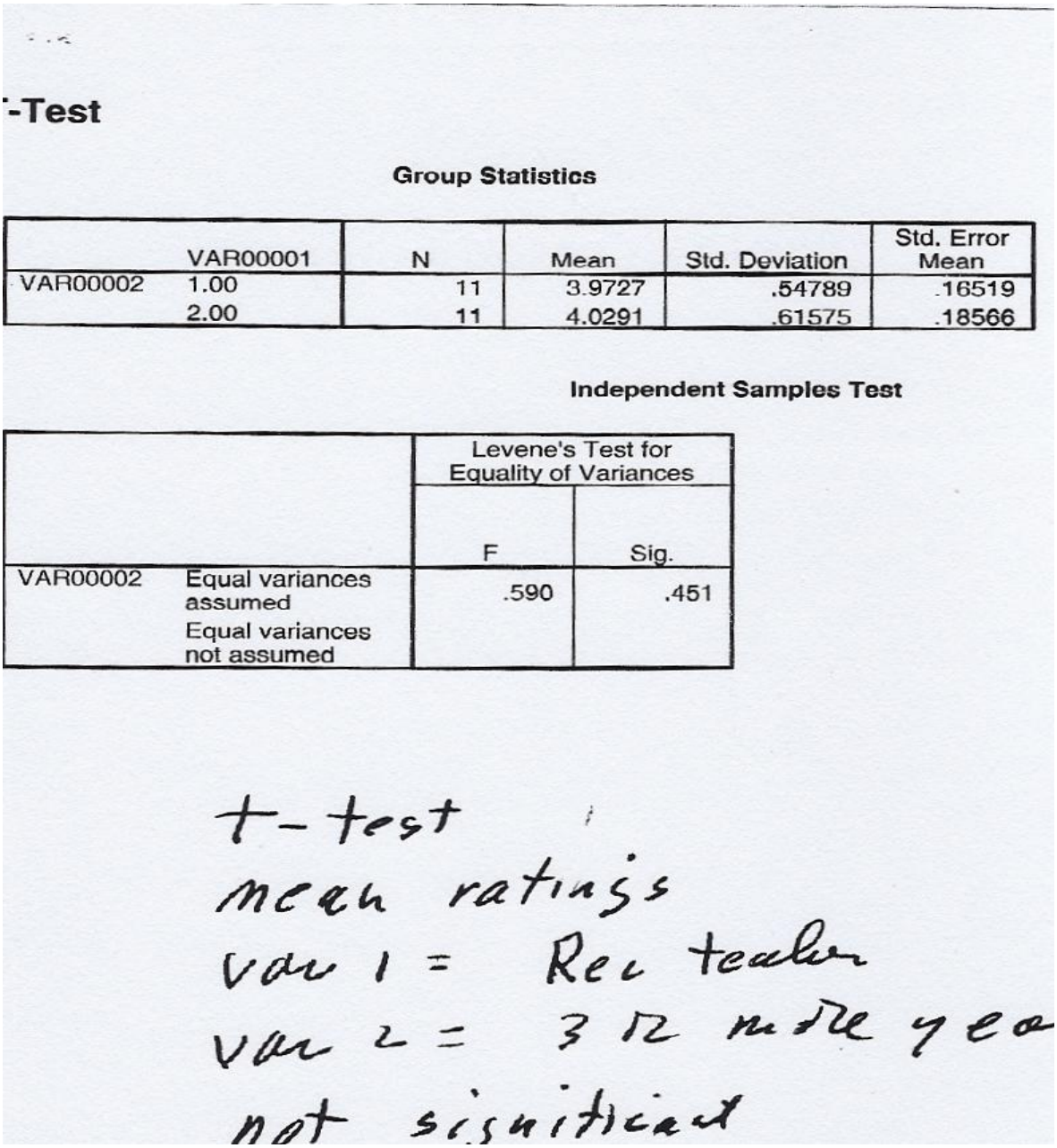
These (this and figure 6) are the same numbers and averages from the previous data sheets, yet they are ranked from the lowest score to the highest score.

Figure 6
Ordering of Data Results – Teachers who have taught in Hamilton County for three or more years

Averages from the 1-5 rating scale / 5:extremely important 1:not important	
3 or more years teaching experience in Hamilton County	
Parent Involvement	95/32= 2.96875
Administration and staff modeling lessons	96/32= 3.0
County staff Development	115/32= 3.59375
Support of Administration	115/31=3.7097
School Staff development	137/32= 4.28125
Willingness to experiment with new approaches	138/32= 4.3125
Your perception of student success	138/32= 4.3125
Personal time for planning and reflection	143/32= 4.46875
Your understanding of the program	145/32= 4.53125
Availability of Manipulatives	146/32= 4.5625
Your personal commitment to the program	148/32= 4.625

Averages from the ranking of categories from 1-11 1:extremely important/ 11:not important	
3 or more years teaching experience in Hamilton County	
Categories	**Means**
Personal time for planning and reflection	117/31= 3.774
Availability of Manipulatives	120/31= 3.871
Your understanding of the program	130/31= 4.194
Your personal commitment to the program	135/31= 4.355
School Staff development	169/31= 5.452
Willingness to experiment with new approaches	179/31= 5.774
Your perception of student success	202/31= 6.516
County staff Development	220/31= 7.097
Support of Administration	234/31= 7.548
Parent Involvement	252/31= 8.129
Administration and staff modeling lessons	285/31= 9.193

Figure 7



T-Test

Group Statistics

	VAR00001	N	Mean	Std. Deviation	Std. Error Mean
VAR00002	1.00	11	3.9727	.54789	.16519
	2.00	11	4.0291	.61575	.18566

Independent Samples Test

		Levene's Test for Equality of Variances	
		F	Sig.
VAR00002	Equal variances assumed	.590	.451
	Equal variances not assumed		

t-test
mean ratings
var 1 = Rec teacher
var 2 = 3 to middle year
not significant

Independent Samples Test

		t-test for Equality of Means			
		t	df	Sig. (2-tailed)	Mean Difference
VAR00002	Equal variances assumed	-.227	20	.823	-.0564
	Equal variances not assumed	-.227	19.733	.823	-.0564

Independent Samples Test

		t-test for Equality of Means		
		Std. Error Difference	95% Confidence Interval of the Difference	
			Lower	Upper
VAR00002	Equal variances assumed	.24851	-.57475	.46202
	Equal variances not assumed	.24851	-.57520	.46247

T-Test

Group Statistics

	V1	N	Mean	Std. Deviation	Std. Error Mean
V2	1	9	4.56	1.014	.338
	2	33	4.58	.708	.123
V3	1	9	3.11	1.537	.512
	2	33	3.03	1.132	.197
V4	1	9	4.00	1.118	.373
	2	33	4.27	.801	.139
V5	1	8	3.88	1.642	.581
	2	32	3.72	1.250	.221
V6	1	9	4.00	1.000	.333
	2	33	3.61	1.248	.217
V7	1	9	3.00	1.732	.577
	2	33	3.06	1.499	.261
V8	1	9	3.22	1.563	.521
	2	33	4.48	.870	.152
V9	1	9	4.22	1.394	.465
	2	33	4.33	.854	.149
V10	1	9	4.11	.782	.261
	2	33	4.30	.847	.147
V11	1	9	4.33	1.323	.441
	2	33	4.55	.754	.131
V12	1	9	4.33	1.323	.441
	2	33	4.64	.653	.114
V13	1	8	4.13	2.850	1.008
	2	31	3.84	2.830	.508
V14	1	8	9.25	1.832	.648
	2	31	9.16	1.809	.325
V15	1	8	6.75	2.816	.996
	2	31	5.42	2.766	.497
V16	1	8	6.50	3.071	1.086
	2	31	7.52	2.541	.456
V17	1	8	7.63	3.378	1.194
	2	31	7.06	3.172	.570
V18	1	8	6.63	3.114	1.101
	2	31	8.10	2.454	.441
V19	1	8	4.50	2.777	.982
	2	31	3.74	2.556	.459
V20	1	8	3.88	2.900	1.025
	2	31	5.74	3.076	.553
V21	1	8	7.25	2.315	.818
	2	31	6.58	2.605	.468
V22	1	8	5.13	2.642	.934
	2	31	4.19	2.496	.448
V23	1	8	4.00	3.854	1.363
	2	31	4.35	2.727	.490

Independent Samples Test

		Levene's Test for Equality of Variances	
		F	Sig.
V2	Equal variances assumed	.335	.566
	Equal variances not assumed		
V3	Equal variances assumed	1.693	.201
	Equal variances not assumed		
V4	Equal variances assumed	1.628	.209
	Equal variances not assumed		
V5	Equal variances assumed	2.017	.164
	Equal variances not assumed		
V6	Equal variances assumed	1.856	.181
	Equal variances not assumed		
V7	Equal variances assumed	1.078	.305
	Equal variances not assumed		
V8	Equal variances assumed	8.677	.005
	Equal variances not assumed		
V9	Equal variances assumed	2.309	.137
	Equal variances not assumed		
V10	Equal variances assumed	.580	.451
	Equal variances not assumed		
V11	Equal variances assumed	1.559	.219
	Equal variances not assumed		
V12	Equal variances assumed	3.245	.079
	Equal variances not assumed		
V13	Equal variances assumed	.006	.939
	Equal variances not assumed		

Independent Samples Test

		Levene's Test for Equality of Variances	
		F	Sig.
V14	Equal variances assumed	.047	.830
	Equal variances not assumed		
V15	Equal variances assumed	.000	.989
	Equal variances not assumed		
V16	Equal variances assumed	.607	.441
	Equal variances not assumed		
V17	Equal variances assumed	.191	.665
	Equal variances not assumed		
V18	Equal variances assumed	1.504	.228
	Equal variances not assumed		
V19	Equal variances assumed	.260	.613
	Equal variances not assumed		
V20	Equal variances assumed	.358	.553
	Equal variances not assumed		
V21	Equal variances assumed	1.117	.297
	Equal variances not assumed		
V22	Equal variances assumed	.216	.645
	Equal variances not assumed		
V23	Equal variances assumed	2.697	.109
	Equal variances not assumed		

Independent Samples Test

		t-test for Equality of Means			
		t	df	Sig. (2-tailed)	Mean Difference
V2	Equal variances assumed	-.069	40	.945	-.02
	Equal variances not assumed	-.056	10.227	.956	-.02
V3	Equal variances assumed	.176	40	.861	.08
	Equal variances not assumed	.147	10.484	.886	.08
V4	Equal variances assumed	-.830	40	.412	-.27
	Equal variances not assumed	-.685	10.348	.508	-.27
V5	Equal variances assumed	.297	38	.768	.16
	Equal variances not assumed	.252	9.133	.807	.16
V6	Equal variances assumed	.871	40	.389	.39
	Equal variances not assumed	.990	15.545	.337	.39
V7	Equal variances assumed	-.104	40	.918	-.06
	Equal variances not assumed	-.096	11.481	.925	-.06
V8	Equal variances assumed	-3.209	40	.003	-1.26
	Equal variances not assumed	-2.326	9.393	.044	-1.26
V9	Equal variances assumed	-.300	40	.766	-.11
	Equal variances not assumed	-.228	9.695	.825	-.11
V10	Equal variances assumed	-.612	40	.544	-.19
	Equal variances not assumed	-.641	13.598	.532	-.19
V11	Equal variances assumed	-.629	40	.533	-.21
	Equal variances not assumed	-.461	9.461	.655	-.21
V12	Equal variances assumed	-.969	40	.338	-.30
	Equal variances not assumed	-.665	9.088	.522	-.30
V13	Equal variances assumed	.255	37	.800	.29
	Equal variances not assumed	.254	10.849	.805	.29

Independent Samples Test

		t-test for Equality of Means			
		t	df	Sig. (2-tailed)	Mean Difference
V14	Equal variances assumed	.123	37	.902	.09
	Equal variances not assumed	.122	10.806	.905	.09
V15	Equal variances assumed	1.209	37	.234	1.33
	Equal variances not assumed	1.196	10.765	.257	1.33
V16	Equal variances assumed	-.967	37	.340	-1.02
	Equal variances not assumed	-.863	9.623	.409	-1.02
V17	Equal variances assumed	.440	37	.662	.56
	Equal variances not assumed	.424	10.423	.680	.56
V18	Equal variances assumed	-1.432	37	.161	-1.47
	Equal variances not assumed	-1.241	9.368	.245	-1.47
V19	Equal variances assumed	.736	37	.467	.76
	Equal variances not assumed	.699	10.278	.500	.76
V20	Equal variances assumed	-1.547	37	.130	-1.87
	Equal variances not assumed	-1.603	11.431	.136	-1.87
V21	Equal variances assumed	.661	37	.513	.67
	Equal variances not assumed	.710	12.024	.491	.67
V22	Equal variances assumed	.931	37	.358	.93
	Equal variances not assumed	.899	10.464	.389	.93
V23	Equal variances assumed	-.301	37	.765	-.35
	Equal variances not assumed	-.245	8.891	.812	-.35

Independent Samples Test

		t-test for Equality of Means		
		Std. Error Difference	95% Confidence Interval of the Difference	
			Lower	Upper
V2	Equal variances assumed	.293	-.612	.572
	Equal variances not assumed	.360	-.819	.779
V3	Equal variances assumed	.460	-.849	1.011
	Equal variances not assumed	.549	-1.134	1.296
V4	Equal variances assumed	.329	-.937	.391
	Equal variances not assumed	.398	-1.155	.610
V5	Equal variances assumed	.526	-.909	1.222
	Equal variances not assumed	.621	-1.246	1.558
V6	Equal variances assumed	.452	-.520	1.308
	Equal variances not assumed	.398	-.452	1.240
V7	Equal variances assumed	.582	-1.237	1.116
	Equal variances not assumed	.634	-1.448	1.327
V8	Equal variances assumed	.393	-2.058	-.467
	Equal variances not assumed	.543	-2.483	-.043
V9	Equal variances assumed	.371	-.861	.638
	Equal variances not assumed	.488	-1.203	.981
V10	Equal variances assumed	.314	-.826	.442
	Equal variances not assumed	.299	-.836	.452
V11	Equal variances assumed	.337	-.894	.470
	Equal variances not assumed	.460	-1.245	.821
V12	Equal variances assumed	.313	-.935	.329
	Equal variances not assumed	.455	-1.332	.726
V13	Equal variances assumed	1.124	-1.990	2.563
	Equal variances not assumed	1.129	-2.202	2.775

Independent Samples Test

		t-test for Equality of Means		
		Std. Error Difference	95% Confidence Interval of the Difference	
			Lower	Upper
V14	Equal variances assumed	.719	-1.368	1.546
	Equal variances not assumed	.725	-1.510	1.687
V15	Equal variances assumed	1.101	-.900	3.561
	Equal variances not assumed	1.113	-1.125	3.786
V16	Equal variances assumed	1.051	-3.145	1.113
	Equal variances not assumed	1.178	-3.654	1.622
V17	Equal variances assumed	1.274	-2.020	3.141
	Equal variances not assumed	1.323	-2.372	3.493
V18	Equal variances assumed	1.028	-3.554	.611
	Equal variances not assumed	1.186	-4.138	1.195
V19	Equal variances assumed	1.031	-1.330	2.846
	Equal variances not assumed	1.084	-1.648	3.164
V20	Equal variances assumed	1.207	-4.313	.579
	Equal variances not assumed	1.165	-4.419	.685
V21	Equal variances assumed	1.012	-1.382	2.720
	Equal variances not assumed	.943	-1.384	2.723
V22	Equal variances assumed	1.001	-1.097	2.960
	Equal variances not assumed	1.036	-1.363	3.226
V23	Equal variances assumed	1.179	-2.744	2.034
	Equal variances not assumed	1.448	-3.637	2.927